**What is claimed is:**

1. An infrared transceiver node, comprising:

a support assembly;

at least two infrared transceivers connected to said support assembly, each of said infrared transceivers including

an infrared transmitter including a light-emitting diode and a transmitter lens for generating an infrared beam having a beam divergence of in the range of about 0.5 to 1 degree,

an infrared receiver including a receiver lens and a photo detector for receiving an infrared beam and converting said infrared beam to an electronic signal,

a first drive assembly for adjusting the elevation of said infrared transceiver,

a second drive assembly for adjusting the azimuth of said infrared transceiver, and

a processor connected to each of said first and second drive assemblies for controlling the azimuth and elevation of said infrared transceiver;

a connector for connecting said infrared transceiver node to a user computer; and

a switching engine connected to said connector and to each of said at least two infrared transceivers for switching data between said user computer and said at least two infrared transceivers.

2. An infrared transceiver node in accordance with claim 1 wherein said photo detector comprises an avalanche photo diode; and

said receiver further includes a dome lens for focusing infrared signals on said avalanche photo diode.

3. An infrared transceiver node in accordance with claim 1 and further including a weatherproof housing containing said support assembly, and wherein:

said weatherproof housing contains an indicator for positioning said weatherproof housing relative to a compass direction; and

said at least two infrared transceivers positioned relative to said indicator.

4. An infrared transceiver node in accordance with claim 3 wherein:

said support assembly includes a shaft;

each of said at least two infrared transceivers positioned with the infrared transceiver and the infrared receiver generally perpendicular to said shaft.

5. An infrared transceiver node in accordance with claim 4 wherein said infrared transceiver node includes four infrared transceivers.

6. An infrared transceiver node in accordance with claim 1 and further including means for connecting each of said at least two infrared transceivers to a network system server.

7. An infrared transceiver node in accordance with claim 6 wherein said means for connecting each of said at least two infrared transceivers to a network system server is selected from the group comprising a modem contained in said infrared transceiver node and a wireless radio frequency transceiver contained in said infrared transceiver node.

8. An infrared transceiver node in accordance with claim 1 wherein said data comprises IP data; and

said infrared transceiver node further including means for managing said incoming and outgoing data in accordance with IP protocols.

9. An infrared transceiver node in accordance with claim 1 and further including:

a system control board contained in said infrared transceiver node including said switching engine;

a transceiver control board positioned on each of said at least two infrared transceivers; and

said system control board connected to each of the transceiver control boards.

10. A network of infrared transceiver nodes, comprising:

a network controller;

a plurality of infrared transceiver nodes, each of said infrared transceiver nodes including

a support assembly;

at least two infrared transceivers connected to said support assembly, each of said infrared transceivers including

an infrared transmitter including a light-emitting diode and a transmitter lens for generating an infrared beam having a beam divergence of in the range of about 0.5-1.0 degrees,

an infrared receiver including a receiver lens and a photo detector for receiving an infrared beam and converting said infrared beam to an electronic signal,

a first drive assembly for adjusting the elevation of said infrared transceiver,

a second drive assembly for adjusting the azimuth of said infrared transceiver, and

a processor connected to each of said first and second drive assemblies for controlling the azimuth and elevation of said infrared transceiver;

a connector for connecting said infrared transceiver node to a user computer;

a switching engine connected to said connector and to each of said at least two infrared transceivers for switching data between said user computer and said at least two infrared transceivers;

each of said plurality of infrared transceiver nodes positioned outdoors on the surface of a support structure;

said plurality of infrared transceiver nodes relatively positioned so that each infrared transceiver node has a line-of-sight to at least one other infrared transceiver; and

means for connecting at least one of said plurality of infrared transceiver nodes to said network controller.

11. A network of infrared transceiver nodes in accordance with claim 10 wherein:

at least one of the support structures comprises the outer surface of a residential home; and

at least one of the user computers comprises a computer within said residential home.

12. A network of infrared transceiver nodes in accordance with claim 10 wherein said photo detector comprises an avalanche photo diode; and

said infrared receiver further includes a dome lens positioned surrounding said avalanche photo diode to focus infrared light onto said photo diode.

13. A network of infrared transceiver nodes in accordance with claim 10 wherein each of said plurality of infrared transceiver nodes further includes a weatherproof housing containing said support assembly and said at least two infrared transceivers, and wherein:

said weatherproof housing contains an indicator for positioning said weatherproof housing relative to compass direction upon an initial installation of said weatherproof housing; and

said at least two infrared transceivers positioned relative to said indicator prior to said initial installation.

14. An infrared transceiver node in accordance with claim 13 wherein:

said support assembly includes a shaft;

each of said at least two infrared transceivers positioned with said infrared transceiver and said infrared receiver generally perpendicular to said shaft.

15. A network of infrared transceiver nodes in accordance with claim 14 wherein said infrared transceiver node comprises four infrared transceivers.

16. A network of infrared transceiver nodes in accordance with claim 15 wherein said means for connecting at least one of said at least two infrared

transceivers to said network system server is selected from the group including a modem positioned in each of said plurality of infrared transceiver nodes and a wireless radio frequency transceiver positioned in each of said plurality of infrared transceiver nodes.

17. A network of infrared transceiver nodes in accordance with claim 10 wherein said data comprises IP data; and

said infrared transceiver node further including means for managing said data in accordance with IP protocols.

18. A point-to-point transceiver, comprising:

a transmitter for generating a beam having a beam divergence of in the range of about 0.5 to 1 degree;

a receiver having a visible window smaller than said beam divergence for receiving a beam;

a first drive assembly for adjusting the elevation of said transceiver;

a second drive assembly for adjusting the azimuth of said transceiver;

a connector for connecting said transceiver node to a user computer; and

a processor connected to each of said first and second drive assemblies for controlling the azimuth and elevation of said infrared transceiver.

19. The point-to-point transceiver of claim 18 wherein said transceiver is an infrared transceiver and wherein:

said transmitter is an infrared transmitter including a light-emitting diode and a transmitter lens for generating an infrared beam having a beam divergence of in the range of about 0.5 to 1 degree;

said receiver is an infrared receiver including a receiver lens, an avalanche photo diode having an active area of about 500 microns for receiving an infrared beam and converting said infrared beam to an electronic signal, and a dome lens adjoining said photo diode for focusing said infrared beam onto said photo diode.

20. A transimpedance amplifier circuit, comprising:

a first differential amplifier;

a second differential amplifier having its inputs connected to the outputs of said first differential amplifier;

a third differential amplifier having its inputs connected to the outputs of said second differential amplifier;

a first resistor connected between the input of said first differential amplifier and the output of said second differential amplifier; and

a second resistor connected between the input of said first differential amplifier and the output of said third differential amplifier.

21. A transimpedance amplifier in accordance with claim 20 wherein the first, second and third differential amplifiers are unmatched differential amplifiers.

22. A method of installing a new point-to-point communications transceiver in a network of existing point-to-point communications transceivers, comprising the steps of:

positioning a new transceiver in a line of sight to at least one existing transceiver;

positioning said new transceiver to point in a predetermined compass direction;

at a predetermined time, said new transceiver performing a first sweep over a first predetermined range to detect a signal from said existing transceiver;

at said predetermined time synchronously with said new transceiver, said existing transceiver performing a second sweep over a second predetermined range to detect a signal from said new transceiver;

upon the completion of said first sweep of said new transceiver, said new transceiver returning to a position of maximum detected signal strength; and

upon the completion of said second sweep of said existing transceiver, said existing transceiver returning to a position of maximum detected signal strength.

23. The method of claim 22 wherein said first and second sweeps are performed with said new and existing transceivers each level to ground; and

if no signal strength is detected by either of said new or existing transceivers, then changing the elevation of said new and existing transceivers and repeating said first and second sweeps to determine if a signal is detected.

24. The method of claim 23 wherein said step of changing the elevation of said new and existing transceivers includes changing the elevation of said new transceiver in an orientation complementary to said existing transceiver.

25. The method of claim 24 wherein said step of changing the elevation of said new and existing transceivers is repeated in half-predicted-beam-width increments while repeating said first and second sweeps to determine if a signal is detected.

26. The method of claim 25 wherein if no signal is detected an error is reported and a second existing transceiver is selected to install said new transceiver.

27. The method of claim 22 and further including the steps of:

storing, during said first sweep of said new transceiver, a detected signal strength; and

storing, during said second sweep of said existing transceiver, a detected signal strength.

28. The method of claim 22 and further including the steps of:

after said new transceiver returns to a position of maximum detected signal strength, with said existing transceiver stationary, tracking said new transceiver over a first predetermined path to determine a new position of maximum signal strength in said first predetermined path; and

after the completion of said tracking of said new transceiver, returning said new transceiver to said new position of maximum signal strength in said first predetermined path.

29. The method of claim 28 and further including the steps of:

after said existing transceiver returns to a position of maximum detected signal strength, with said new transceiver stationary, tracking said existing transceiver over a second predetermined path to determine a new position of maximum signal strength in said second predetermined path; and

after the completion of said tracking of said existing transceiver, returning said new transceiver to said new position of maximum signal strength in said second predetermined tracking path.

30. The method of claim 29 wherein said first and second sweeps are each generally circular sweeps.

31. The method of claim 29 wherein said first and second predetermined tracking paths each comprises a dither path.

32. The method of claim 29 and further including the steps of :

monitoring the detected signal strength of said new transceiver;

monitoring the detected signal strength of said existing transceiver;

if said detected signal strength of said new or said existing transceiver falls below a predetermined threshold, then repeating each of said tracking of said new transceiver in said first predetermine tracking path and said tracking of said existing transceiver in said second predetermined path to return each of said new and existing transceivers to new positions of maximum signal strength.

33. The method of claim 32 wherein said step of repeating each of said tracking of said new transceiver and said existing transceiver is initiated at a first time preprogrammed for said new transceiver and a second time preprogrammed for said existing transceiver.

34. The method of claim 22 wherein said new and existing transceiver each comprise an infrared transceiver.

35. The method of claim 22 wherein said new transceiver is mounted in a housing, said step of positioning said new transceiver to point in a predetermined

compass direction including positioning said housing to point in a selected compass direction.

36. A system for installing a new point-to-point communications transceiver in a network of existing point-to-point communications transceivers, the system comprising:

means for positioning a new transceiver in a line of sight to at least one existing transceiver;

means for positioning said new transceiver to point in a predetermined compass direction;

means operative at a predetermined time, for initiating said new transceiver to perform a first sweep over a first predetermined range to detect a signal from said existing transceiver;

means operative at said predetermined time, for initiating said existing transceiver performing a second sweep over a second predetermined range to detect a signal from said new transceiver;

means operative upon the completion of said first sweep of said new transceiver, for initiating said new transceiver to return to a position of maximum detected signal strength; and

means operative upon the completion of said second sweep of said existing transceiver, for initiating said existing transceiver to return to a position of maximum detected signal strength.

37. A system for installing a new point-to-point communications transceiver in a network of existing point-to-point communications transceivers, comprising:

a processor;

a memory connected to said processor;

said memory operative with control instructions stored in said processor to cause said processor to perform the steps of

positioning a new transceiver in a line of sight to at least one existing transceiver;

positioning said new transceiver to point in a predetermined compass direction;

at a predetermined time, said new transceiver performing a first sweep over a first predetermined range to detect a signal from said existing transceiver;

at said predetermined time synchronously with said new transceiver, said existing transceiver performing a second sweep over a second predetermined range to detect a signal from said new transceiver;

upon the completion of said first sweep of said new transceiver, said new transceiver returning to a position of maximum detected signal strength; and

upon the completion of said second sweep of said existing transceiver, said existing transceiver returning to a position of maximum detected signal strength.

38. A method of maintaining the alignment of first and second communicating transceivers in a network of existing point-to-point communications transceivers, comprising the steps of:

monitoring the signal strength received by said first transceiver;

monitoring the signal strength received by said second transceiver;

if either of the signal strength received by said first transceiver or the signal strength received by said second transceiver falls below a predetermined threshold, then

with said second transceiver stationary, tracking said first transceiver over a first predetermined path to determine a position of maximum signal strength detected by said first transceiver in said first predetermined path,

after the completion of said tracking of said first transceiver, returning said first transceiver to said position of maximum signal strength detected by said first transceiver in said first predetermined path,

with said first transceiver stationary, tracking said second transceiver over a second predetermined path to determine a position of maximum signal strength detected by said second transceiver in said second predetermined path, and

after the completion of said tracking of said second transceiver, returning said second transceiver to said position of maximum signal

strength detected by said second transceiver in said second predetermined tracking path.

39. A method in accordance with claim 38 wherein:

said step of tracking said first transceiver over a first predetermined path is performed at a first predetermined time; and

said step of tracking said second transceiver over a second predetermined path is performed at a second predetermined time.

40. A method in accordance with claim 39 wherein:

said first predetermined time is stored in a memory contained in said first transceiver;

said second predetermined time is stored in a memory contained in said second transceiver; and

said first predetermined time is different from said second predetermined time.

41. A method in accordance with claim 38 wherein each of said first and second predetermined paths is a dither path.

42. A method in accordance with claim 38 wherein each of said first and second transceivers is an infrared transceiver.

43. A system maintaining the alignment of first and second communicating transceivers in a network of existing point-to-point communications transceivers, comprising:

a first detector for monitoring the signal strength received by said first transceiver;

a second detector for monitoring the signal strength received by said second transceiver;

a processor connected to each of said first and second detectors;

a memory connected to said processor and storing control instructions;

said processor responsive to said first and second detectors and operative with the control instructions in said memory to perform the steps of

if either of the signal strength received by said first transceiver or the signal strength received by said second transceiver falls below a predetermined threshold, then

with said second transceiver stationary, tracking said first transceiver over a first predetermined path to determine a position of maximum signal strength detected by said first transceiver in said first predetermined path,

after the completion of said tracking of said first transceiver, returning said first transceiver to said position of maximum signal strength detected by said first transceiver in said first predetermined path,

with said first transceiver stationary, tracking said second transceiver over a second predetermined path to determine a position of maximum signal strength detected by said second transceiver in said second predetermined path, and

after the completion of said tracking of said second transceiver, returning said second transceiver to said position of maximum signal strength detected by said second transceiver in said second predetermined tracking path.

44. A system for maintaining the alignment of first and second communicating transceivers in a network of existing point-to-point communications transceivers, comprising:

means for monitoring the signal strength received by said first transceiver;

means for monitoring the signal strength received by said second transceiver;

means operative, if either of the signal strength received by said first transceiver or the signal strength received by said second transceiver falls below a predetermined threshold, for

with said second transceiver stationary, tracking said first transceiver over a first predetermined path to determine a position of maximum signal strength detected by said first transceiver in said first predetermined path,

after the completion of said tracking of said first transceiver, returning said first transceiver to said position of maximum signal strength detected by said first transceiver in said first predetermined path,

with said first transceiver stationary, tracking said second transceiver over a second predetermined path to determine a position of maximum signal strength detected by said second transceiver in said second predetermined path, and

after the completion of said tracking of said second transceiver, returning said second transceiver to said position of maximum signal strength detected by said second transceiver in said second predetermined tracking path.

45. A method of aligning first and second communicating transceivers in a network of existing point-to-point communications transceivers, comprising the steps of:

monitoring the signal quality of a digital signal transmitted by said second transceiver and received by said first transceiver;

if the signal quality of the digital signal received by said first transceiver falls below a predetermined threshold, then

with said second transceiver stationary, tracking said first transceiver over a predetermined number of positions in a first predetermined path to determine one or more positions of maximum signal quality detected by said first transceiver in said first predetermined path,

if a single position of maximum signal quality is detected by said first receiver in said first predetermined path, then returning said first transceiver to said single position of maximum signal quality detected by said first transceiver in said first predetermined path, and

if two positions of maximum signal quality are detected by said first receiver in said first predetermined path, then returning said first transceiver to the center between said two positions of maximum signal quality detected by said first transceiver in said first predetermined path.

46. The method of claim 45 wherein said signal quality of said digital signal is determined as a function of an error rate determined by the first transceiver.

47. The method of claim 46 wherein the error rate is determined to a seventy-five percent confidence interval.

48. The method of claim 46 wherein the digital signal includes a plurality of first signal packets each of approximately 1440 bytes and a plurality of second signal packets each of approximately 64 bytes.

49. The method of claim 48 wherein each of the plurality of first and second packets includes a sequential counter.

50. The method of claim 45 wherein said first predetermined path is selected from the group comprising a vertical path, a horizontal path and a diagonal path.

51. The method of claim 50 wherein said method of aligning first and second communicating transceivers in a network of existing point-to-point communications transceivers is repeated for a second predetermined path selected from the group comprising a vertical path, a horizontal path and a diagonal path.

52. The method of claim 45 wherein said method of aligning first and second communicating transceivers in a network of existing point-to-point communications transceivers is repeated for said first predetermined path.

53. The method of claim 45 wherein said digital signal is transmitted on an infrared beam.

54. The method of claim 53 wherein said method of aligning first and second communicating transceivers in a network of existing point-to-point communications transceivers is repeated for said first predetermined path a predetermined number of times based on a spot size of the infrared beam.

55. The method of claim 45 wherein said method of aligning first and second communicating transceivers in a network of existing point-to-point communications transceivers is repeated periodically, the timing based on the quality of the digital signal received by the first transceiver.

56. A system for aligning first and second communicating transceivers in a network of existing point-to-point communications transceivers, comprising:

a processor;

a memory connected to said processor and storing instructions for controlling the operation of the processor, the processor operative with the instructions to perform the steps of:

monitoring the signal quality of a digital signal transmitted by said second transceiver and received by said first transceiver;

if the signal quality of the digital signal received by said first transceiver falls below a predetermined threshold, then

with said second transceiver stationary, tracking said first transceiver over a predetermined number of positions in a first predetermined path to determine one or more positions of maximum signal quality detected by said first transceiver in said first predetermined path,

if a single position of maximum signal quality is detected by said first receiver in said first predetermined path, then returning said first transceiver to said single position of maximum signal quality detected by said first transceiver in said first predetermined path, and

if two positions of maximum signal quality are detected by said first receiver in said first predetermined path, then returning said first transceiver to the center between said two positions of maximum signal quality detected by said first transceiver in said first predetermined path.

57. The system of claim 56 wherein said signal quality of said digital signal is determined as a function of an error rate determined by the first transceiver.

58. The system of claim 57 wherein the error rate is determined to a seventy-five percent confidence interval.

59. The system of claim 57 wherein the digital signal includes a plurality of first signal packets each of approximately 1440 bytes and a plurality of second signal packets each of approximately 64 bytes.

60. The system of claim 59 wherein each of the plurality of first and second packets includes a sequential counter.

61. The system of claim 56 wherein said first predetermined path is selected from the group comprising a vertical path, a horizontal path and a diagonal path.

62. The system of claim 61 wherein said method of aligning first and second communicating transceivers in a network of existing point-to-point communications transceivers is repeated for a second predetermined path selected from the group comprising a vertical path, a horizontal path and a diagonal path.

63. The system of claim 56 wherein said method of aligning first and second communicating transceivers in a network of existing point-to-point communications transceivers is repeated for said first predetermined path.

64. The system of claim 56 wherein said digital signal is transmitted on an infrared beam.

65. The system of claim 64 wherein said method of aligning first and second communicating transceivers in a network of existing point-to-point communications transceivers is repeated for said first predetermined path a predetermined number of times based on a spot size of the infrared beam.

66. The system of claim 56 wherein said method of aligning first and second communicating transceivers in a network of existing point-to-point communications transceivers is repeated periodically, the timing based on the quality of the digital signal received by the first transceiver.

67. A system for aligning first and second communicating transceivers in a network of existing point-to-point communications transceivers, comprising:

means for monitoring the signal quality of a digital signal transmitted by said second transceiver and received by said first transceiver;

means for, if the signal quality of the digital signal received by said first transceiver falls below a predetermined threshold,

with said second transceiver stationary, tracking said first transceiver over a predetermined number of positions in a first predetermined path to determine one or more positions of maximum signal quality detected by said first transceiver in said first predetermined path,

if a single position of maximum signal quality is detected by said first receiver in said first predetermined path, then returning said first transceiver to said single position of maximum signal quality detected by said first transceiver in said first predetermined path, and

if two positions of maximum signal quality are detected by said first receiver in said first predetermined path, then returning said first transceiver to the center between said two positions of maximum signal quality detected by said first transceiver in said first predetermined path.